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ABSTRACT

Emphasizing the need for realistic tasks in studying the interaction of readers with text, this report first suggests current problems with research on interactive reading and pedagogical prescriptions on comprehension. It then presents a checklist of reader, text, and task characteristics that should be considered in reader-text studies, including text typology, length, form of display, and authorial intention; reader purpose, background knowledge, and motivation; and the evaluation procedure. The report then applies this checklist to three realistic studies of interactive reading and concludes with a discussion of the reading tasks studied and suggestions for future research. (MM)

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# SOME APPROACHES TO STUDYING REALISTIC READING TASKS

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Linguists and psycholinguists have increasingly stressed that interaction is involved in reading a text. However, the nature of the interaction and the factors likely to affect it have not been fully examined. Indeed, even recent studies have often not involved realistic reading tasks and hence have inhibited normal interaction. This contribution reviews, mainly from a methodological perspective, studies made by the authors in which realistic tasks were given to readers. Criteria for assessing reading tasks are suggested and note is also made of research in progress to which these criteria are applied.

## INTRODUCTION

The view of reading as an interactive process is now so well established that it is easy to forget it was ever in doubt. Numerous recent volumes in psychology (e.g. Sanford and Garrod, 1981), in literary criticism and theory (e.g. Fish, 1980) and in psychology, linguistics and artificial intelligence (e.g. Spiro et al, 1980) all point to the active and interactive role of the reader in the reading process. Nevertheless, this very widespread recognition that reading is, in fact, interactive seems to have stifled precision in stipulating what kinds of role the reader can play, how a text can possibly 'interact', how reading differs from e.g. conversing and so on. Most relevant to our present purpose, relatively few recent studies have been of realistic tasks, whereas the criterion for several of our studies has been that the task must appear to subjects to represent the kind of reading task they do outside the research and classroom situation.

It may be recognition of the lack of face validity in many of their tasks that has led researchers to suggest that pedagogy has been ahead of research in the study of text (e.g. Spiro et al., 1980). While this view undoubtedly has some basis, it is both generous and misleading for two reasons. One reason is that the view of text as sacrosanct, and hence not to be interacted with, is in large measure due to the way texts have been used in education; these uses have been criticised by such various writers as Huey, 1908 (p.179) who spoke of 'listless poring over underinteresting texts' and Blampain (1979) whose criticism is concerned with the exercise of control through the selection of texts and their mode of employment in schools. Secondly, although the applications of text analysis to reading development in education remain unclear (Santa and Hayes, 1981; Pearson and Camperell, 1981; Pugh, 1981), there is little doubt that it is due to recent studies that our understanding

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of how to analyse text structure has advanced considerably as, to a lesser extent, has our appreciation of how readers use text. There is no evidence of comparable but independent advance in pedagogy; indeed that seems to follow research trends, at least in foreign language teaching (Ulijn, 1980a).

Pedagogical prescriptions on comprehension - and it is comprehension that one is speaking of in considering interaction in reading - have nevertheless often had little basis in reality or in empirical investigation (e.g. Barrett's taxonomy and other approaches reviewed in Jenkins and Parry, 1980 and more critically discussed in Pugh, 1978; Ulijn, 1981a, notes that this is true more broadly for courses in reading a foreign language also). Similarly advice on reading for various purposes has often been highly derivative (rather than tested against behaviour) and the categories of purposes and appropriate skills or styles ill-thought out. Detailed criticism of pedagogical approaches to developing silent reading is offered elsewhere (Pugh, 1978), where the derivative nature of much 'advice' is highlighted. Such criticism suggests that pedagogy has not been highly advanced as regards the reading of texts; except perhaps that more realistic tasks and texts have been used in teaching than in some studies of reading. Independently initially, we have been concerned over a number of years with studying reading behaviour in realistic situations. The poverty of the pedagogy of silent reading led us to these studies which, though concerned with psycholinguistic theory also, were intended to yield results which would be useful in the teaching and evaluation of courses. Although the studies were 'psycholinguistic' they were partly motivated by a desire to break away from the then dominant concern with sentence-perception (ably reviewed in Levelt, 1978) and to emphasise the role of the reader in using texts in order to achieve something.

The studies are, in the main, and as we note in referring to them, already reported elsewhere. However, we consider it worthwhile to give attention here to some of the methodological issues. Not least because studies of the reading of text have by no means overcome these problems - often employing texts which are specially constructed or otherwise unusual and rarely considering purpose as integral to the task - we feel that the study of realistic reading tasks still requires attention. Thus while welcoming the growth in research into readers' interaction with text, we nevertheless would argue that the possibilities for analysing longer stretches of text and the increased awareness of factors such as purpose, motivation, world knowledge and background knowledge, and so on, have not been fully exploited in experimental design.

## READING TASKS

In normal reading, the reader deals with a text more or less of his own choice and he uses the text to achieve some more or less well-defined purpose. He interacts with the text in using it dynamically, for the physical form of the text does not change; only the readers' perceptions of various features of it change, whether from one reading to the next or, as writers such as Eagleton (1976) point out over time and according to changes in ideological standpoints.

This latter historical standpoint question does not concern us, nor does the question of interaction between linguistic levels in a text, a proper use of terminology (discussed in e.g. Beaugrande, 1980 and Ulijn 1980a) which is

nevertheless confusing. Rather we wish to suggest some of the considerations to be taken into account in setting tasks which do not inhibit the dynamic interaction between a reader and a text, an interaction in which purpose is a strong element. Such considerations are, of course, relevant to pedagogy as well as to research.

A check-list would take into account the text, the reader and the task. Texts can be considered in respect of such aspects as:

1. typology (their format and intended function);
2. length;
3. ratio of linguistic to 'non-linguistic' information (such as illustrations, charts etc., and in foreign language texts 'international' versus language specific terminology);
4. linguistic features (register, vocabulary, syntax etc.);
5. language of text (in relation to language of reader or, if in his own language, to his language proficiency);
6. form of display (original, teaching handouts, projected etc.);
7. authorial intention.

We are aware that some of these categories are contentious and even hazardous (as is 7, e.g.) and that judgements are difficult and partly subjective (as in 3, e.g.). Nevertheless, some such categorisation needs to be developed and there seems to be no way of avoiding eclecticism, nor any advantage in attempting to do so.

With regard to the reader, at least the following need to be considered:

8. the purpose (which he is given or which is implicit in the task);
9. background knowledge which he is likely to possess for reading the text;
10. motivation (his own purposes for reading).

The reader's task needs to be considered in terms of:

11. the styles of reading appropriate to achieving success and their use in a strategy (using the terms styles and strategy as identified and discussed in Pugh, 1978);
12. the evaluation procedure (type of scoring; whether simultaneous, intrinsic, successive, etc.).

The check-list was originally developed by one of us (J.M. U.) as a basic for choosing texts and tasks for both research and pedagogical purposes. It is intended to be suggestive rather than definitive and we cannot here discuss more fully its bases nor offer the various expansions and qualifications which we should make if this were our sole present purpose. What we can perhaps more usefully do is to apply it, in the following three sections, to studies which we have made. Following this we offer some discussion, identifying types of task which seem most susceptible to study and making some proposals about those for which it is harder to devise means of studying without distortion to their realistic nature as perceived by the reader.

## THE SHADOK EXPERIMENT

The Shadok experiment was designed to explore difficulties encountered by Dutch students of electrical engineering in reading French. Instructions for using the display unit of an apparatus, named Shadok after a popular French cartoon character, were given in French; the answer was connected to a com-

puter so that reading times and erroneous manipulations of the unit (resulting from misunderstanding of instructions) could be recorded and some feedback also given to students. Full details are given in Ulijn (1978). The task was deemed to be realistic in that in their normal work engineers use short pieces of text, as here in the form of instructions, with reference to non-reading activities.

Text

To follow the criteria introduced earlier, in regard of its typology the text consisted of 14 items each containing problems of the kind engineers might encounter (e.g. making adjustments, measurements, calculations). In length the text was 4 pages, 153 sentences, 813 word tokens and 257 word types which is normal for instruction sheets. Linguistic and non-linguistic information is mixed in that indispensible information comes both from the text and from the panel. In its linguistic features the text can be classified as scientific and technical but not very specialised. It comprised 166 content words and 91 function words. Comparing them with frequency lists, 17.4% belong to a general register, 54.7% to a common scientific register and 28% to a very technical register, with frequent use of nominalizations, passives, participles and infinitive stuctures. As the text is instructional, there are many imperative forms. The language of the text is foreign (for Dutch students) but is the kind of French these students are most likely to read in their work. The form of display is on a monitor (light against dark) which is, perhaps, the least realistic aspect of the task although there are advantages in that feedback can be given to the students (as well as records made by the researcher as already noted). The authorial intention is to enable students to perform certain tasks correctly.

Reader

The purpose given to the reader accords with the authorial intention in this case (though this is by no means always so). The background knowledge of the Dutch students was systematically varied by choosing different year groups. Linguistic knowledge also varied according to proficiency measured by a standardised test. French native students, whose reading was studied for comparative purposes, all had advanced technical knowledge. Motivation is always hard to assess or manipulate. These subjects were unpaid volunteers doing a realistic task which had an added incentive in the form of feedback given to them. Hence motivation should be high. Also the feedback, the precision and attention necessary and the mode of display would go towards ensuring that other possible reader purposes could not easily come to the fore and conflict with the given purpose.

Task

The style of reading required was receptive (i.e. reacting without criticising or cross referring etc., to the plain sense and not skimming, search reading and so on). The evaluation was by analysis of times and correctness of response, as recorded in the computer. A simple non-verbal check (by means of pressing the appropriate button) was used on comprehension, producing here a successive scoring method. Recording time introduced a simultaneous element, though not with the reliability associated with eye-movement recording since it was not possible to determine what time was spent reading and what in reflecting on the reading.

## THE BEAUSITE EXPERIMENT

The Beausite experiment was similar to the Shadok experiment in that it compared Dutch and French native readers and the reading was of instructions and directions. However the task was made more general and less specifically related to engineering, so that broader samples of subjects could be compared. Fuller details are given in Ulijn (1980b and 1981 b).

### Text

The text consisted of instructions in French for finding one's way in a French town, in fact an imaginary town. In typology it matched the kind of information which hosts provide for guests and tourist offices for visitors. As regards length, the text contained 35 sentences in 3 pages. This is perhaps longer than is usual for such instructions, but here there were directions to 7 places, namely: the centre, a car park, the cathedral, the railway station, the stadium, the theatre and the motorway. In one condition, both linguistic and non-linguistic information was given, the latter in the form of a map. In the other condition the words only were given. This is not unrealistic (cf. e.g. directions given by telephone). In linguistic features the text could be characterised as of a general register but with some participle and infinitive structures, which were introduced for research purposes. The presence of many imperative forms typifies the instructional text. The languages of the text were both French and Dutch, justified on the grounds that both native and foreign languages are often used in finding one's way in a city abroad. The form of display was sentence by sentence using remote controlled slide projectors. The text was light on dark, which is less realistic but held to be more legible. The serial presentation inhibits some common reading behaviours though does not entirely fail to imitate the way in which directions of this kind are presented and received. The authorial intention is to guide the reader to find his way easily.

### Reader

The purpose given to the reader is in accord with the intention ascribed to the author. The background knowledge assumed was supposed to be common to students from several disciplines and equally dispersed among the French and Dutch subjects, all of whom could be expected to have experience of finding their way. In fact, it was found that some subjects, especially women who did not hold a driving licence, had an inadequate sense of orientation to cope with the tasks. Motivation was perhaps enhanced by a small payment but it was felt that the task itself provided intrinsic motivation.

### Task

The style of reading mainly required was receptive (following the author's directions) with some responsive reading (e.g. in cross referring). The normal non-verbal action resulting from reading, i.e. actually trying to find one's way, was absent as, in consequence, was the feedback this provides. Comprehension questions simulated this to some extent. The evaluation was thus partly by successive means, intermittently sampling understanding of sections of text, with a simultaneous measure of reading time or, more strictly, of time in milliseconds for which each sentence was displayed to any particular reader.

## LOCATION OF INFORMATION

The two tasks examined so far have both involved the reader in close reading

and careful thinking on what is read. This is a very common type of reading both in learning situations and in work situations. Another common task is to use a book in order to find information which is to be located for further use, rather than applied immediately as in the Shadok and Beausite experiments.

A series of studies, given in fuller detail in Pugh (1978) and Neville and Pugh (1981), has been made of how books are used to locate information. Subjects range from middle school children to university students. Observation and recording is by video, using a method based on an idea of Karslake (1940) but much modified. Karslake suggested reading through a semi-silvered mirror so that the subject and the reading matter could be photographed in one frame. The present apparatus uses a reading stand, one half of which is semi-reflective so that a similar effect is achieved, i.e. both the subject's face and the book can be seen at the same time. Scoring is by inspection of the video recordings, though more objective (though still unobtrustive) means are also now being employed and are discussed in a later section.

Text

Texts used have varied within a range of subjects. However, as regards their typology all have been non-fiction, intended primarily for reading (rather than simply reference) but with good indexes and clear tables of contents. Length also varied between 100 and 300 pages approximately. The ratio of linguistic to non-linguistic information was very high, though this need not be so, of course; as regards linguistic features, the register not highly technical, as books of wide interest were chosen because of the constitution of the samples of the subjects. The language of the text (English) was not a factor under study here, although not all subjects were native English speakers. The form of display was the normal printed book. Authorial intention was deemed to be mainly to inform, though informing is often difficult to seperate from persuasion. (Indeed the information scientists Bernier and Yerkey, 1979, have argued that informative writing should persuade).

Reader

The purpose given to the reader was to find answers to 3 or, in some studies, 4 questions given in advance. Background knowledge was assumed to be adequate in all cases and roughly equal between subjects in any one study. Motivation was sometimes increased by payment (though only to volunteers and only to try to create an obligation to actually attend). The specificity of the questions and the fact that the tasks were timed should ensure that any conflicting purposes the reader might have could not easily be satisfied without his clearly failing to pursue the task in hand.

Task

The task was designed so that various routes were possible to the appropriate place in the book. Thus a variety of styles of reading was used, more strategically by some than others. Evaluation was successive as regards answering the questions, which did not require complicated answers. Cloze, multiple choice, one word answers and short summaries were all employed at various times, but summaries were only required for the final question so the time spent answering was relatively insignificant until the reading was finished. Time taken to achieve an answer provided a simultaneous measure.

## DISCUSSION

All the tasks we have discussed have, we would claim, been realistic. However, the range of reading which can be examined using these approaches is severely restricted, for in all of them the task is composed of relatively small and well-defined elements. Moreover, all have involved reading in order to do something in the near future. This is not to say that one cannot use tasks of this kind to elicit a range of reading styles, for the information location tasks show that this is possible. However, despite the realistic nature of the tasks one cannot with assurance generalise to other reading tasks, such as the more usual one of reading and assimilating a book or newspaper for example. De Beaugrande (1981) is his analytical review of models of reading and understanding rightly points to the importance of what is known as ecological validity for models: the same is as true, and perhaps more so for experiments, as he has implied elsewhere (Beaugrande, 1980). For this reason it seems important to pursue ways of extending the type of task which can be studied under relatively normal conditions.

Eye-movement research has tended in the past to severely distort the task which the reader undertakes and has paid scant attention to matters such as purpose. However, we are currently designing a series of studies using an eye-movement monitoring system where the subject has only to wear lightweight spectacles. Horizontal and vertical movement of both eyes (cf. Bedwell, Grant and McKeown, 1980) are recorded using scleral reflection for horizontal and the lower lid boundary for vertical movements. The apparatus is developed from equipment described in Haines (1980). Insofar as we are concerned with patterns of movements, as opposed to absolute point of gaze, the head need not be constrained. Text can be presented normally with this system, which can be used in conjunction with the direct observation and recording method described for the information location studies. It can also be used in conjunction with a recording system which includes a page turn recorder developed by P. Whalley at the Open University.

Whalley's application is to the use by Open University students at home of Open University study texts. Our aim is to include comparison between patterns of eye-movements in scientific texts by native and foreign readers as well as the validation of some proposed means for analysing texts. In all cases we are ensuring that the tasks are realistic for the reader. This involves consideration of criteria of the kind which we have examined in this contribution.

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